

# DWNT/Hydrogenated Fullerene Reinforced Polyethylene for Radiation Shielding Applications, Phase I

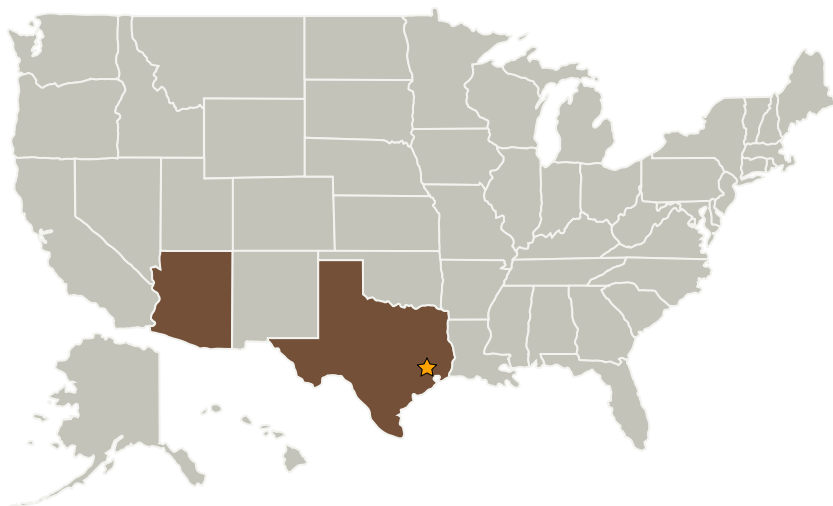
Completed Technology Project (2005 - 2005)



## Project Introduction

Manned space exploration requires radiation protection, particularly since the impact of radiation on the health and safety of humans on extended missions is not known. The best material candidates are those with high hydrogen contents and low molecular weight, and thus polymers are excellent choices. However, their thermal stability and mechanical properties need to be improved. MER proposes to achieve this using a combination of DWNT with hydrogenated fullerenes, where the latter can be deposited inside the prior, achieving the so-called "peapod" materials. Developed composites will be characterized for mechanical performance and radiation hardness as a screening tool. Selected composites of varying thickness and composition will be chosen for more comprehensive testing in Phase II.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
MER Corporation	Supporting Organization	Industry	Tucson, Arizona



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Johnson Space Center (JSC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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## Primary U.S. Work Locations

Arizona

Texas

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

### Principal Investigator:

Raouf O Loutfy

## Technology Areas

### Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.5 Radiation
    - └ TX06.5.3 Protection Systems